COMPUTER

DATA

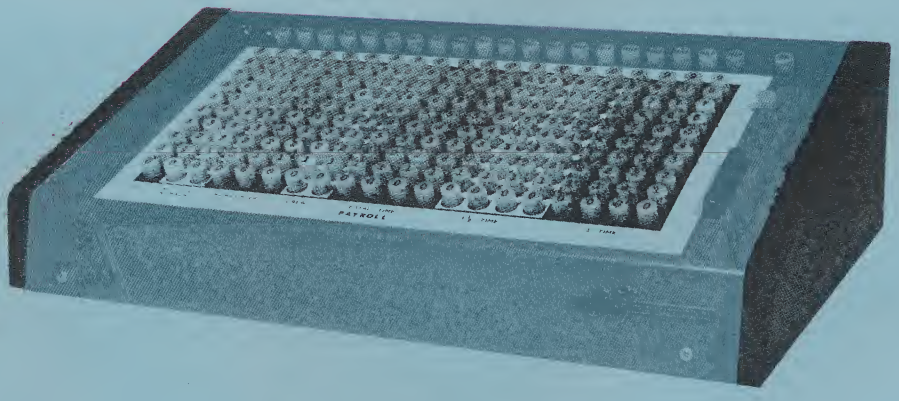
ENTRY

KEYBOARD

ci²

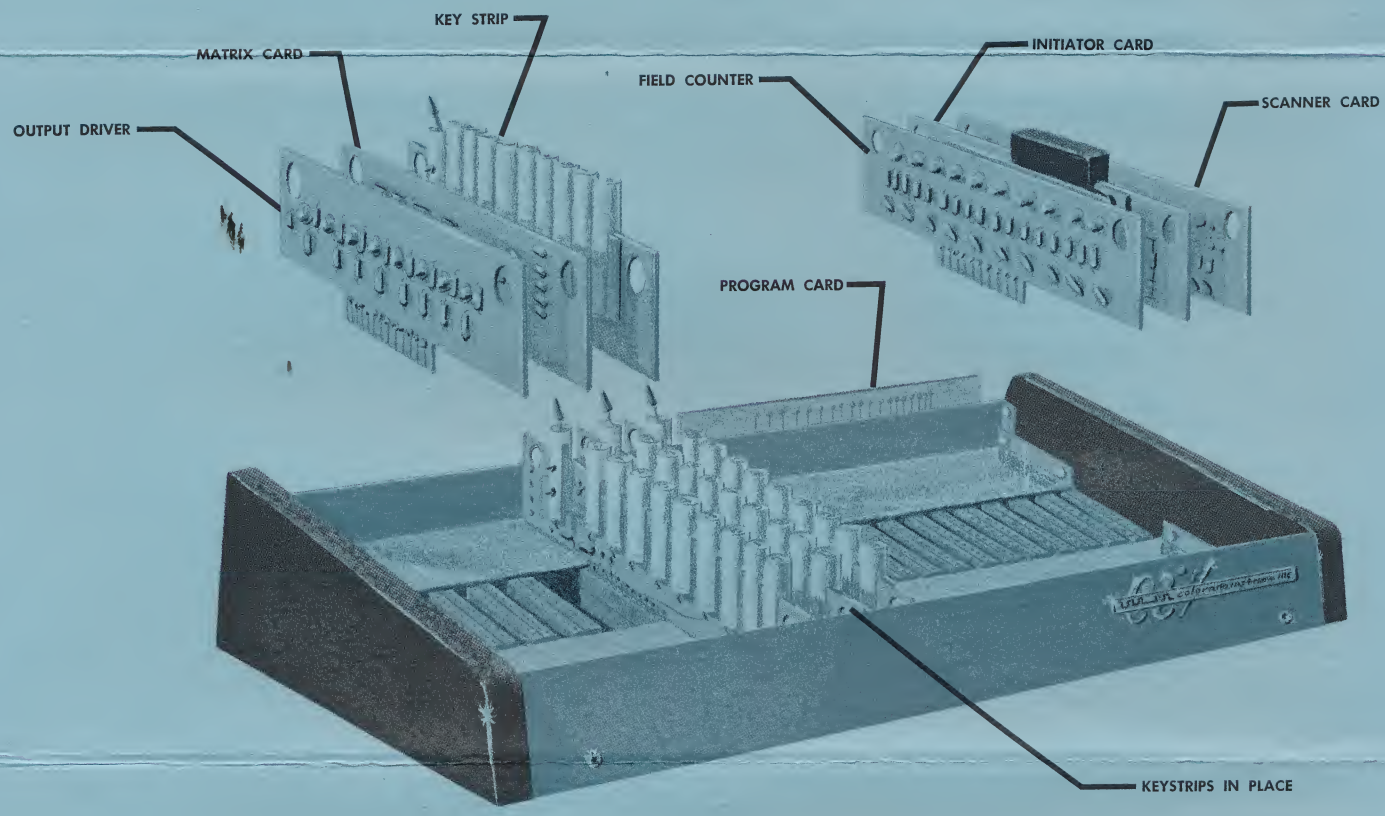
C-DEK

MODEL GA



colorado instruments, inc.

Data acquisition is the last remaining bottleneck preventing complete efficiency in today's vast computer operations. In most installations, data is handled manually too many times before it reaches the computer. Each manual operation slows down the job and increases the number of entry errors. To minimize this time lag and error accumulation, Colorado Instruments, Inc., has designed the C-Dek (Computer Data Entry Keyboard). C-DEK GATHERS DATA AT THE SOURCE AND PUTS IT INTO COMPUTER FORMAT IMMEDIATELY. It is designed to be so simple to operate that anyone can quickly learn to use it. It is designed to operate accurately because the data will not be handled again before it is fed into the computer. The responsibility for data entry is thus placed with the one who has the most concern for its accuracy. Subsequent handling is eliminated.



C-DEK IS COMPUTER-ENGINEERED FOR FLEXIBILITY AND ACCURACY . . . . . .

OUTPUT DRIVER:	The output driver card supplies the proper output signals to drive either a card punch, a paper tape punch, a magnetic tape recorder — or the computer directly.
MATRIX CARD:	The matrix card converts the decimal language of the C-Dek to the code format of your computer.
KEYSTRIPS:	The modular keystrips, marked 0-9 (alpha on special order), permit easy expansion of the system.
FIELD COUNTER:	(Optional.) The field counter tabulates the number of fields of data entered. At a predesignated count, it can cause additional supervisory characters to be recorded as required.
INITIATOR CARD:	This card contains the command switches, such as power "On-Off," the "Record" bar, "Tape Leader," and others on special order.
SCANNER:	The electronic solid-state scanner is fast and reliable.
PROGRAM CARD:	The plug-in program card adjusts the wiring to permit C-Dek to present data to your digital computer in the desired sequence for each application.

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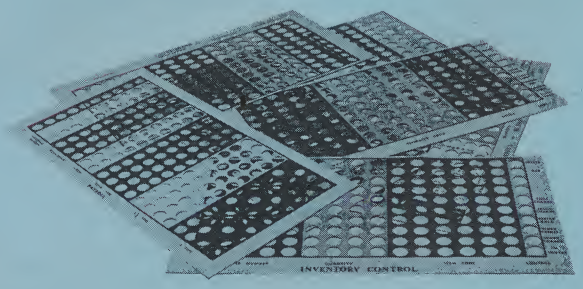
THE FOLLOWING FEATURES ARE INCORPORATED TO MAKE C-DEK SIMPLE AND ACCURATE:

OVERLAY MATS:



A plastic overlay mat, marked off with multicolored sections in accordance with the format, is used to lay over the keys. Specific data entry columns are clearly marked in bold type on the border of the mat so the operator has no confusion as to proper entry procedures for a given job.

LIGHTED KEYS:

C-Dek's feather-touch keys light up when pressed and remain lighted until the record bar is depressed. Only one light in each column is allowed to be on at any one time. Since the data is not recorded until the record bar is depressed, the operator may visually verify the entry and make corrections before the data is recorded. Such visual verification eliminates the corrections which would otherwise have to be made in the recording itself.

REPEAT/RESET SWITCH:

Should certain parts of the data field become repetitive, the operator may flip the "Repeat/Reset" switch at the top of the appropriate key columns. The information will then remain stored in the lighted buttons rather than resetting to zero after each recording. By eliminating repetitive key strokes, C-Dek further speeds data preparation.

LONG KEYBOARD:

The C-Dek may be ordered with as many columns of keys as a task requires. The entire data field may be entered as one entry instead of several.

FIXED FIELD:

The C-Dek scans the information on the lighted push-buttons and generates a fixed field of data. Uniform data words for computer processing are thus guaranteed.

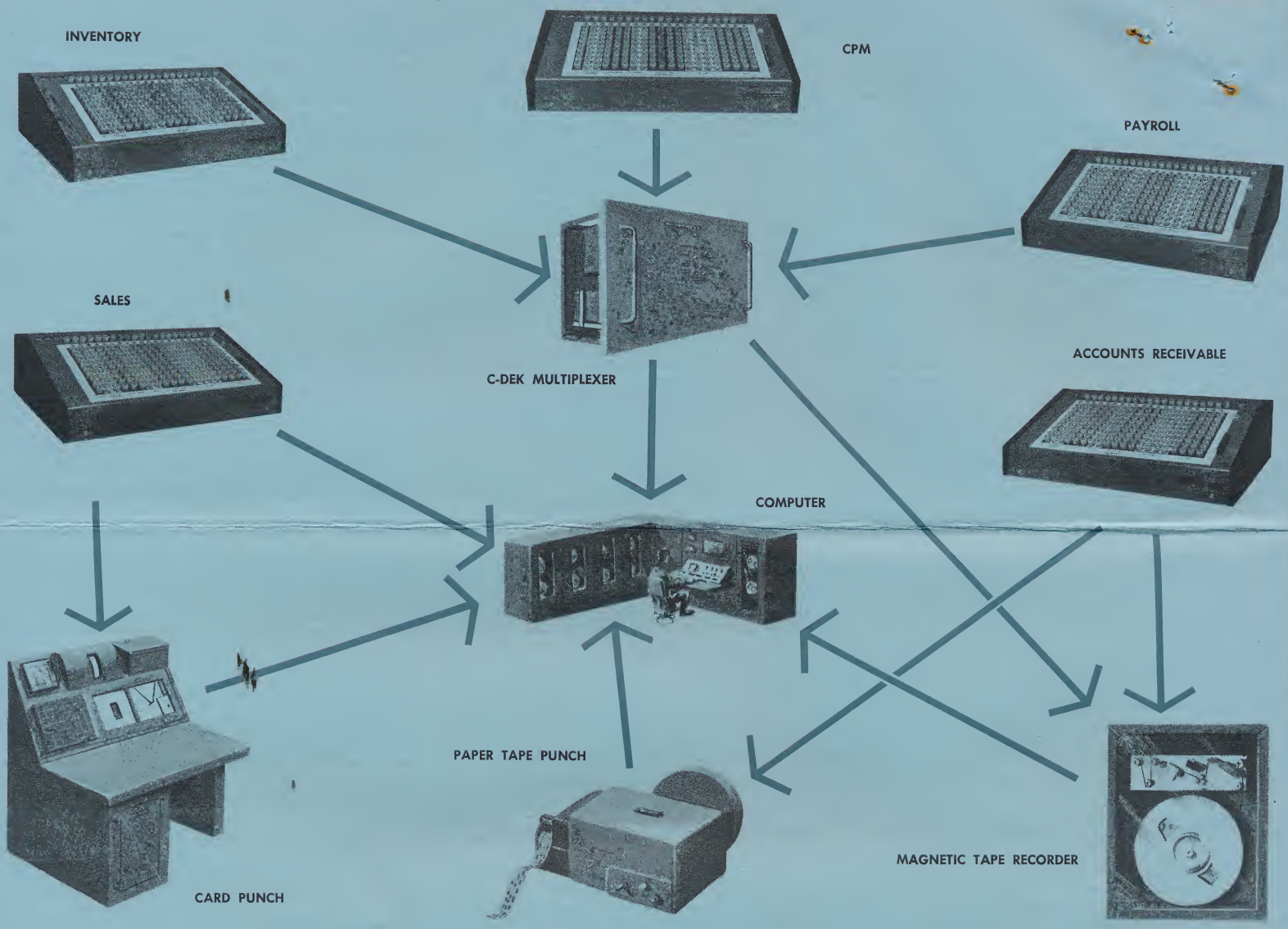
AUTOMATIC CHARACTER GENERATION:

C-Dek is capable of generating special characters automatically each time the "record" bar is pressed. Characters such as "beginning of file," "end of file," "carriage return," "line feed," "figures shift," "space," "card eject," "identification code," and others may be generated and properly sequenced. This eliminates the need for the operator to remember to enter these important characters.

SPECIFICATIONS:

(20 KEYSTRIPS)

SIZE:	22⅛" wide x 13½" deep x 6¼" high
WEIGHT:	23 pounds
POWER INPUT:	105 - 125 v., 60 cps line
OUTPUT:	C-Dek is capable of driving a card punch, a paper tape punch, a magnetic tape recorder, or other peripheral equipment, as specified by the customer. Attachment for hard copy printer is also available.



C-Dek can be fed directly to the recording medium or directly on-line to the computer. When it is desirable to have many C-Deks feeding one recorder, it may be done by going through a C-Dek multiplexer. The inherent flexibility of C-Dek makes it applicable to practically every data acquisition situation.

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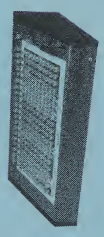

PLACE
STAMP
HERE

DATA COLLECTION WITH C-DEK®

by

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Colorado Instruments, Inc. has been working in the data acquisition field for nearly four years. About two years ago, we felt there was a great need for a data collection device that could turn source data into a computer-usable form. We feel we have answered many of these needs with our Computer Data Entry Keyboard (C-Dek).

There are several requirements that a collection device must meet in order to be used for gathering source data. Three of these requirements are simplicity, accuracy, and speed.

Simplicity is important because generally only unskilled personnel are available to operate such equipment at the source. C-Dek has a number of features that contribute to ease of operation. A single entry to cover an entire transaction is possible because the C-Dek can be built with a keystrip for every digit needed.

A plastic overlay mat, marked off with multicolored sections in accordance with the format, is used to lay over the keys. Specific data entry columns are clearly marked in bold type on the border of the mat so the operator has no confusion as to proper entry procedures for a given job. The format of the overlay mat may be laid out to the operator's specifications so that the entries may be entered sequentially left to right.

Keystrips are available with Repeat/Reset switches. These switches give the operator the option of either retaining the data for another entry or resetting it to a prescribed character, such as zero.

C-Dek has the capability of entering fixed characters along with the variable data from the keystrips each time the record bar is depressed. This eliminates the need for the operator to remember to enter such characters as "end of line," "end of file," etc.

The feather-touch keys light up when pressed and remain lighted until the record bar is depressed. Since the data is not recorded

until the record bar is depressed, the operator may visually verify the entry and make corrections before the data is recorded.

Accuracy is implemented significantly by the simplicity discussed above, but C-Dek also has other features to facilitate accuracy. The check-digit system is available for checking the entry validity of pre-assigned numbers. Supervisory logic can be applied to the columns of data which meet logic requirements. In either system the recording function is inhibited until the check feature has been satisfied. C-Dek also generates parity when desired.

Speed of operation of a source data collection device has a direct bearing on economy of such a system and, therefore, becomes an important factor. All of the simplicity and accuracy features of the C-Dek contribute to the operator's speed and make it highly acceptable.

Versatility is another design criterion necessary to create data collection equipment to be compatible with existing data processing systems. C-Dek is built in modular form and easily handles these problems. Various inputs to C-Dek will be discussed later. The output of C-Dek can be in any code format and can be changed by merely changing the code matrix code. The C-Dek can operate "on line" to the computer or be recorded on magnetic tape, punch paper tape, or punch cards. Many C-Deks may be connected to one recording device by using a multiplexer.

The program card allows the operator to assign data to the keystrips of his choice and, at the same time, program the data output in the sequence required by the computer.

A field counter card (counts the number of entries) may be used to block data for better computer efficiency. It can also be used to conserve cards when connected to a card punch or paper when listing on a typewriter.

The keystrips themselves are versatile. The lighted key stores the data, but can also do auxiliary work, such as closing a relay. Alpha-numeric data can be entered by using two special keystrips. The first keystrip is engraved "0"; "1 AJ"; "2 BKS";--to "9 IRZ" to represent the Hollarith code. The second keystrip has only four keys, engraved "0" through "3." Both keystrips are used to generate one character. When zero is lighted in the second keystrip, it makes the first keystrip numeric. A "1," "2" or "3" in the second keystrip would create the first, second, and third alpha zone, respectively, in the first keystrip.

A brief discussion of some different applications of C-Dek will best point up its ability to fit into existing systems.

One of the simpler models has only a few thumbwheel switches accessible through the hood. The C-Dek receives data from an outside source. At a preset time interval, the C-Dek electronically scans the outside data, as well as the numbers set up on the thumbwheel switches, and records them on punch paper tape.

The "Automated Project Cost System" at the U. S. National Bureau of Standards was originated because of the existence of C-Dek. Prior to the new system, administrators turned in to the computer group hand-written figures concerning costs and budgets. The data was key-punched and run through an IBM 1401 to convert it to magnetic tape. The magnetic tape was then run through an IBM 7090 computer to get the printed report. Unfortunately, this process took a minimum of six weeks.

Now, with their C-Dek, some 45 people enter their expenditures for a given pay period. The C-Dek records the data directly on a digital stepping recorder (Digi-Data Model 1420) in IBM format with a density of 556/inch. This tape is taken to the 7090 computer and processed in five minutes. Their C-Dek is a straight-forward model, using six thumbwheel switches for semi-fixed data and 12 keystrips.

A large electrical contractor is using C-Dek to do accounting. They are presently running Payroll, Accounts Payable, Accounts Receivable, Inventory, and Miscellaneous data through C-Dek onto punch paper tape. The tape is sent to a local service bureau for processing. This C-Dek has 40 keystrips. It also drives an adding machine to check totals on critical columns.

One of the nation's largest mail order companies recently purchased C-Deks for entering orders for catalog items. This C-Dek has 27 keystrips and has built-in logic to help prevent erroneous entries. A red light will light above any keystrip that does not satisfy the logic, and the data cannot be recorded. These C-Deks drive a paper tape punch, and the tape can be mailed to the computer or transmitted over teletype lines.

A C-Dek is being used in the medical field to record counts from a scintillation counter. The C-Dek contains decade counters to register the counts from the scintillator. Every second the counters are scanned, and the number is punched on paper tape.

A psychologist is using a C-Dek to record the activity of ten chickens. Each chicken is being monitored for five activities. These activities (switch closures) cause lamps to light in the C-Dek. The lamps are scanned every ten seconds and extinguished if they were on. The data is recorded on punch paper tape.

The list of applications seems to be endless. We are presently building order writing stations for branch sales offices with C-Deks interfaced to automatic typewriters. Our current quotations cover such applications as inventory control, automatic data collection from scales, gas pumps, etc., and arithmetic C-Deks of the comptometer type. There are many others too specific and lengthy to describe here.

In essence, the C-Dek is a combination of electronic modules that allow the hardware to be designed around a data-processing system, instead of having to design the system around the hardware.

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Thank you for your inquiry regarding our C-Dek, which was described in some of the recent trade journals. I believe the enclosed literature will give you an idea of the instrument's versatility and usefulness.

Because of its modular construction, the C-Dek can be built to your particular program and computer requirements. It has been field-tested in a number of different applications and has been consistently reliable in its operation. Applications are varied--ranging from processing accounting data to recording animal activity in a psychologist's laboratory. Currently on our production line is a model designed for processing catalog orders in field offices of a large mail-order company.

It is difficult to quote an exact price for the instrument without knowing your particular application, how many keystrips would be required for the job, type of readout desired, and similar technical information. To give you a general idea, however, a ten-column C-Dek, without recording device, would be $1,692; a 15-column, $2,038; and a 20-column, $2,380. A CI^2 paper tape punch for recording data entered into the C-Dek is priced at $495.

Should you have any questions regarding the C-Dek and its application to any specific data-gathering problems, please contact me.

Sincerely yours,

Jerry L. Hannah

Jerry L. Hannah
Sales Manager

JLH/maw
Encl.